

CLAIMS

57. (Twice Amended) A field effect transistor comprising:

a pair of source/drain regions having a channel region positioned therebetween; and

a gate positioned operatively proximate the channel region, the gate comprising semiconductive material conductively doped with at least one of a p-type or n-type conductivity enhancing impurity effective to render the semiconductive material electrically conductive, a silicide layer and a conductive diffusion barrier layer effective to restrict diffusion of p-type or n-type conductivity enhancing impurity, the conductive diffusion barrier layer comprising at least two of W_xN_y , TiO_xN_y and TiW_xN_y .

58. (Amended) The transistor of claim 57 wherein the conductive diffusion barrier layer comprises W_xN_y and TiW_xN_y .

59. (Amended) The transistor of claim 57 wherein the conductive diffusion barrier layer comprises TiO_xN_y and TiW_xN_y .

60. The transistor of claim 57 wherein the conductive diffusion barrier layer is formed over the silicide layer.

61. The transistor of claim 57 wherein the silicide layer is formed over the conductive diffusion barrier layer.

62. Integrated circuitry comprising:

a field effect transistor including a gate, a gate dielectric layer, source/drain regions and a channel region; the gate comprising semiconductive material conductively doped with a conductivity enhancing impurity of a first type and a conductive diffusion barrier layer effective to restrict diffusion of first or second type conductivity enhancing impurity; and

insulative material received proximate the gate, a contact structure extending through the insulative material to the gate, the contact structure including semiconductive material provided in electrical connection with the gate, the semiconductive material provided through the insulative material being conductively doped with a conductivity enhancing impurity of a second type, the conductive diffusion barrier layer of the gate being provided between the gate semiconductive material and the semiconductive material provided through the insulative material.

63. The integrated circuitry of claim 62 wherein the first type is n and the second type is p.

64. The integrated circuitry of claim 62 wherein the first type is p and the second type is n.

65. The integrated circuitry of claim 62 wherein the gate also comprises a conductive silicide.

66. (Amended) The integrated circuitry of claim 65 wherein the silicide and the conductive diffusion barrier layer comprise the same metal.

67. The integrated circuitry of claim 62 wherein the semiconductive material within the insulating material contacts the conductive diffusion barrier layer of the gate.

Sub 7
D6
68. The integrated circuitry of claim 62 wherein the semiconductive material within the insulating material does not contact the conductive diffusion barrier layer of the gate.

Cont'd
C1
69. The integrated circuitry of claim 62 wherein the gate also comprises a conductive silicide, the semiconductive material within the insulating material contacting the silicide.

70. The integrated circuitry of claim 62 wherein the conductive diffusion barrier layer is received over the gate semiconductive material, and the semiconductive material within the insulating material is received over the gate.

71. The integrated circuitry of claim 62 wherein the insulative material comprises an opening within which the semiconductive material therein has been provided, the opening being substantially void of any conductive diffusion barrier layer material.

Sub 7
D7
72. (Twice Amended) The integrated circuitry of claim 62 wherein the conductive diffusion barrier layer comprises a material selected from the group consisting of W_xN_y , TiO_xN_y , and TiW_xN_y , and mixtures thereof.

73. (Amended) The integrated circuitry of claim 72 wherein the conductive diffusion barrier layer comprises W_xN_y .

74. (Amended) The integrated circuitry of claim 72 wherein the conductive diffusion barrier layer comprises TiO_xN_y .

75. (Amended) The integrated circuitry of claim 72 wherein the conductive diffusion barrier layer comprises TiW_xN_y .

Cancel claims 76 and 77.

78. The integrated circuitry of claim 65 wherein the conductive diffusion barrier layer is formed over the silicide layer.

79. The integrated circuitry of claim 65 wherein the silicide layer is formed over the conductive diffusion barrier layer.

80. The integrated circuitry of claim 62 wherein the gate includes opposing sidewalls in at least one cross section, the contact structure have opposing sidewalls in the one cross section, at least one of the contact structure sidewalls not aligning with either of the opposing sidewalls of the gate in the one cross section.

81. The integrated circuitry of claim 62 wherein the gate includes opposing sidewalls in at least one cross section, the contact structure have opposing sidewalls in the one cross section, neither of the contact structure sidewalls aligning with either of the opposing sidewalls of the gate in the one cross section.

New Claims

Add new claims 82-92 as follows:

82. (Added) The integrated circuitry of claim 62 wherein the conductive diffusion barrier layer comprising at least two of W_xN_y , TiO_xN_y and TiW_xN_y .

83. (Added) The integrated circuitry of claim 82 wherein the conductive diffusion barrier layer comprises W_xN_y and TiW_xN_y .

84. (Added) The integrated circuitry of claim 82 wherein the conductive diffusion barrier layer comprises TiO_xN_y and TiW_xN_y .

85. (Added) The integrated circuitry of claim 62 wherein the gate is defined by a single conductive region consisting of a) the conductively doped semiconductive material of the first type, and b) the conductive diffusion barrier layer.

86. (Added) The integrated circuitry of claim 85 wherein the conductive diffusion barrier layer comprising at least two of W_xN_y , TiO_xN_y and TiW_xN_y .

87. (Added) The integrated circuitry of claim 85 wherein the conductive diffusion barrier layer comprises W_xN_y and TiW_xN_y .

88. (Added) The integrated circuitry of claim 85 wherein the conductive diffusion barrier layer comprises TiO_xN_y and TiW_xN_y .

Cont'd
C2
89. (Added) The integrated circuitry of claim 62 wherein the gate is defined by a single conductive region consisting of a) the conductively doped semiconductive material of the first type, b) the conductive diffusion barrier layer; and c) a conductive silicide.

90. (Added) The integrated circuitry of claim 89 wherein the conductive diffusion barrier layer comprising at least two of W_xN_y , TiO_xN_y and TiW_xN_y .

91. (Added) The integrated circuitry of claim 89 wherein the conductive diffusion barrier layer comprises W_xN_y and TiW_xN_y .

92. (Added) The integrated circuitry of claim 89 wherein the conductive diffusion barrier layer comprises TiO_xN_y and TiW_xN_y .